

# Towards Constructivism: Investigating Students' Perceptions and Learning as a Result of Using an Online Environment

Matthew Hughes and Norma Daykin, *University of the West of England, UK*

## SUMMARY

The effects of changing to an online delivery mechanism within a third year, undergraduate, module have been evaluated against the lecturing staff's intended move towards a student-centred, constructivist learning approach. It has been suggested that this type of delivery can increase critical thinking and active learning for students. In the study described in this paper, qualitative analytical techniques were used in order to explore students' experiences of online delivery. The study addressed their perceptions about online methods as well as the educational implications of their patterns of usage of online resources. The findings suggest that students were quick to overcome anxieties about online learning but generally did not develop any significant degree of discussion. It is argued that a move to online delivery needs a greater attention to design and development of facilitator skills than has been previously recognized.

## INTRODUCTION

In recent years, much has been written on the subject of online learning. Several authors (Billings, 2000; Cartwright, 2000; Cravener, 1999; Laurillard, 2000; Milstead and Norman, 1998) have highlighted the benefits of online methods for students and staff while others have explored the ways in which such methods have been used (Torrison and Davis, 2000; Tait, 1997). Some papers have investigated students' perceptions of this new learning medium (Andrusyszyn *et al.*, 1999; McCartan, 2000). However, many of these papers describe projects that appear to have been carried out by lecturers who have significant information and communication technology (ICT) skills and with relatively small groups of volunteer students. Hence, a lecturer's enthusiasm for online delivery may have created a form of Hawthorne effect, where students' evaluation may have been affected by this enthusiasm rather than the delivery. This paper reports on an evaluation of online delivery carried out by a group of lecturers, who had minimal ICT skills, with a large cohort of 220 students. The evaluation used qualitative techniques of analysis to explore the students' experience, focusing on their perceptions about online methods as well as the educational implications of their patterns of usage of online resources.

## BACKGROUND

The programme that was used as a basis for this study was an undergraduate module in nursing management offered by the Department of Health and Social Care within the University of the West of England, UK. The decision to deliver the course in an online fashion was taken by the teaching team as a solution to several pedagogical and logistical problems. First, the students appeared not to find the content sufficiently engaging or stimulating. Second, the mode of delivery may have inhibited students' engagement. For example, while subjects such as leadership and teamwork were quite prominent in the teaching, students were only able to engage with these in the isolated practice of essay writing. Hence, the lecturers became aware of a possible theory-practice gap: although the students appeared to be able to write about theories of teamwork, the module did not provide opportunities to transfer this knowledge into practice. Finally, attendance at lectures was low, with anecdotal evidence suggesting that students did not perceive the module content as useful in their nursing careers.

The tutors were in agreement that changes in the mode of delivery were needed in order to address these problems. Moreover, it was felt that a more stimulating

approach was needed. After discussion of module evaluation data, a number of changes were adopted and would be evaluated during the academic year 2000/2001. It was felt that the introduction of group projects would encourage students to experience team-work. Online learning methods were also introduced in order to enhance the group work process. For example, in order to facilitate communication between students, who were spread across four different sites of the University, electronic discussion boards were introduced. These also allowed students to post-up (from any computer with Internet access) their ideas and essay drafts for consideration and discussion by their peers. Online learning was therefore introduced in a context in which the pedagogical and logistical aims were clear: to encourage students to develop a co-operative and more constructivist learning style (Tait, 1997).

Once the decision to make the changes had been made, there was a year of preparation focusing on a range of issues such as the impact of online delivery both on student learning and the role of the educational facilitator. Academic procedures and staff development issues were also discussed. At each stage an 'intelligent vandal' approach was used to identify flaws in the proposal (for example, non-submission, resits, university regulations, access issues, etc.). After this period, the programme commenced with module content focusing strongly on management issues in nursing practice. Three short assignments were introduced, each requiring progressively higher order thinking skills. For the exercise, students were formed into groups of six, with members drawn from all sites. Each group was asked to choose a management topic for the group study, while individual members chose a sub-topic linked to the group theme. Each group was allocated a private discussion board and all students were provided with access both to a 'main' board and a 'comments' board.

The first assignment focused on theory relating to the chosen topic. Each student was required to post a short essay onto the group board. The second assignment required students to draw on the other group members' essays, applying the theories discussed within them to their experience of their latest placement practice (during the run of the module). The third assignment attempted to develop the learning from assignments one and two, and was concerned with recommending changes to improve or maintain practice quality in their placement. The assignments and procedure for developing them were designed to use the students' real placement experience as a context for reflecting

on the theory. Students, in collaboration, negotiated their own topics. While this would allow them to identify where the boundaries lay between topics, it would also provide a mechanism for discussion about blurred boundaries and alternative viewpoints. It allowed them to reflect on theory and practice differences and to develop problem-solving skills as they constructed recommendations to overcome these differences. Most of these intentions feature in Murphy's constructivist checklist (Murphy, 1997).

In order to allow time for the online groupwork to take place, the number of lectures delivered was reduced to less than half those of previous semesters. Furthermore, workshops were substituted for some of the remaining lectures. Effectively, the model of delivery was changed from a didactic one relying mainly on lectures to a hybrid of online and traditional learning involving workshop and e-seminar delivery with an online facilitator.

The teaching team was introduced to the software to be used at two half-day workshops and again at pertinent times during the first delivery of the re-designed module. The team member who led the changes was also available by mobile phone for ad-hoc enquiries.

## EVALUATION METHOD

Students' experiences of online learning were evaluated, with permission, through content analysis of student and staff communication. Following a pilot analysis, it was identified that most groups followed a similar pattern in their communication. Therefore, for this paper, data from a randomly selected sample of seven out of a total of 37 groups was selected for presentation. Two focus group interviews were also carried out at the end of the module. These groups represented a purposive sample drawn from three groups: those who had read and posted the largest number of communications; those that had posted a moderate number of communications; and those who had posted hardly any communications (less than five). All texts were then analysed for emergent themes and this analysis was validated by a colleague who had no direct involvement with the module. Coding and further analysis were then carried out using the Nudist™ qualitative data analysis software.

## FINDINGS

The most noticeable issue to arise was an initial anxiety about online learning amongst students. This centred mainly on ICT skills as well as the processes involved in undertaking the module. Students appeared to go through a form of 'learning displacement', where they were unsure of what was expected of them, as suggested by the statements shown below. These messages are reproduced exactly as posted by students.

Hi I am in the same group as you are but I dont have any clue of what we are doing at the moment.I am going to need every one's support as Iam not very competent with computer.

Hello group, [—] here. I have been thinking over the weekend could I just ask that we chose something simple to do so I stand a chance of passing,as computers are not my strong point.

. . . here again , I have changed my mind about a million times . Im having a crisis . I wish I had a firm question I was answering then I wouldnt be so lost . I dont even know where to begin on such a vast topic , Confused

This is a nightmare . what on earth am I exactly doing ? how do I relate it to practice and how on earth do I do recommendations for practice ? . I am completely lost and in need of some guidance . . I have never been so confused ! I hope you can give me just some pointers to shed some light on the whole matter ! I will be eagerly awaiting your reply so I can make a start

hi I dont know about you but this all seems a bit daunting. Write me back ASAP.

hi, I am starting to get stressed right now.

Hi there group. Looking forward to this module but its also very scary.

Many students showed relief about logging in for the first time or irritation about difficulties in logging in. There were requests to each other to be patient if they made mistakes and remarks about ICT not being 'their thing'. The anxiety around the process appeared to centre on a lack of understanding about what they were required to do. Again, there were requests, this time for help. Several appeared to be happy to abdicate responsibility to other group members for the choice of topic. Perhaps the newness of the learning environment was partially the cause of their anxiety.

it did [make angry] because I don't like computers, and the reason I don't like it is because I'm afraid of them, it's fear of the unknown and I can't even and I can't use

them . . . so this came about and it made me very angry. 'I don't want to do that – load of rubbish.' But it's actually forced me to be able to attempt to use the computer. And it's made me use the internet and now . . . I never used to use the e-mail. I knew what the password was and I could have got on to it but I've never sent an e-mail until this . . . smodule.

This was the first time many of them had used the Internet and they may have been unaware of how to navigate through the module site. Certainly, the web pages containing information about the module were not visited often. There were only 0.67 visits per student to the 'Frequently Asked Questions' page throughout the course of the entire module. Assuming some students visited it more than once, it is apparent that many did not visit it at all. What also emerged is that these students preferred to direct their questions directly to the module leader rather than their group and before looking it up for themselves. Lecturer-centred communication tended to revolve around how to access information that was readily available on the Website.

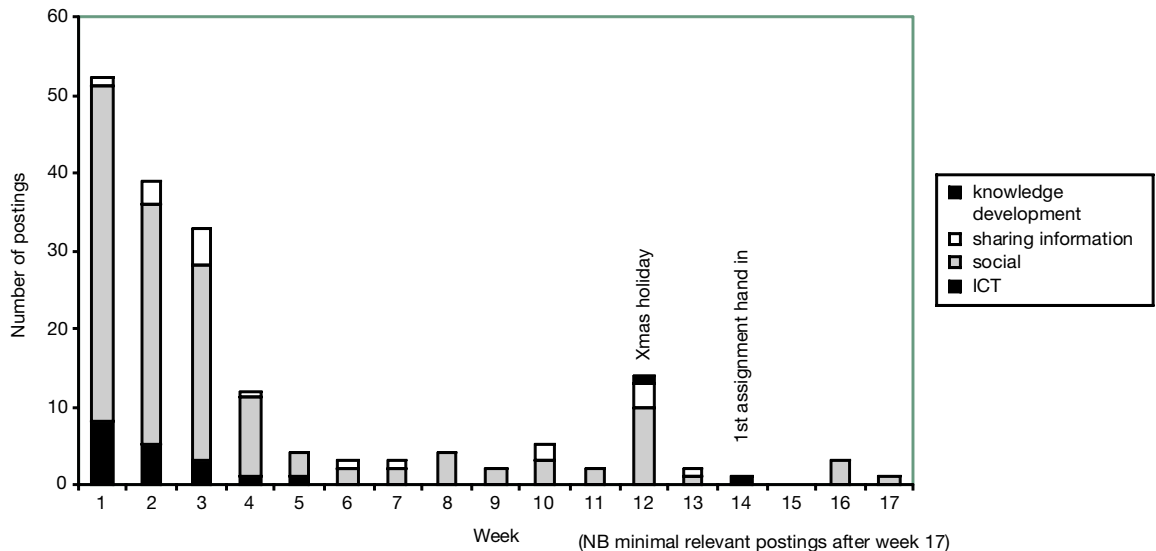
Hi, it seems I can't find any articles about the topic [successful team] could let me know where is the best place to look for thanks.

Alternatively, they would ask for information on how to carry out processes. Much of this was readily available or was inappropriate: questions about literature searching on bibliographic databases or even how to access the databases appeared regularly. Further questions and answers centred on the students wanting to verify that they had understood the assignment process or had completed a process successfully (for example, online assignment submission).

The students' anxiety about ICT would fit in with Salmon's five-stage model of online learning (Salmon, 2000, p. 25). This model is concerned with the development of online groups and the subsequent creation of online learning environments. The five stages of the model are as follows:

- Stage 1: access and motivation
- Stage 2: online socialization
- Stage 3: information exchange
- Stage 4: knowledge construction
- Stage 5: development

Stage 1 focuses on ICT issues: it is concerned with accessing the environment and motivation. In our study, the content of the first lecture and the need to submit assignments online provided the motivation to



**Figure 1** *Message posting by week and category in the group discussion boards*

log on. It also provided a source of anxiety for those with limited ICT skills. The other stages of the Salmon model are apparent in Figure 1, which shows the relationship between the number of communications and time over the course of the module.

Social or greeting messages were clearly evident initially. However, these tended to be superficial; often they would be a brief introduction to their branch of nursing and their campus base with little other information. Further messages would include hope that the group was keeping well and there was frequent use of the phrase 'talk to you soon'. Unlike Cartwright's findings, information exchange messages were rare (Cartwright, 2000). Of these, most were concerned with exchanging Website addresses or reference sources. Although this can be considered a development in online learning, we suspect that this frequently occurs in face-to-face meetings amongst students. The benefit would be that online delivery allows students to follow up Websites immediately.

Knowledge construction debate was not evident in any of the groups' discussion boards. As Cartwright (2000) found, there was a marked reluctance among students to criticize other people's work. It appeared that the academically stronger students would be the first to post draft essays and that the other students would then praise them.

Hello everyone, just a quick note to say that I have read your essays and they all look really good. I don't think

anyone is going to have any problems. Any comments about mine would be gratefully received. Speak to you soon

Where discussion did appear was in the module-comments notice board, which was available for the whole cohort. Here, one discussion developed around the topic of ICT in nurse education. A student who questioned the purpose of the ICT component of the module prompted a debate around the need for ICT skills, which developed to include the use of ICT in practice areas and the future of ICT developments in healthcare. A further issue that appeared in this discussion was the demarcation between a complaint and a dissatisfaction stated for the purpose of debate:

Point taken, however expressed frustration is better than suppressed frustration. I do not consider the students who have made comments on the notice board are wingeing and moaning. They are taking the opportunity to express how they feel on most occasions in a constructive manner. If we did not have debates and challenge the status quo where would we be as a society now, and more to the point where would nursing be. Correct me if I'm wrong but I'm sure there are activists out there fighting for the rights of individuals who have family responsibilities to have those responsibilities taken into consideration by there employers. Lets not shut up the people who are brave enough to express their opinion. Surely what we should be doing is encouraging them to not only state what they think is wrong with the system but also focus on what can be done to improve it. I'm sure you must be aware that as a manager telling people to stop wingeing and moaning will probably stop them

contributing anything to the debate what so ever. The result of this is that unfortunately we may miss out on some valuable piece of information. Similar to the rules of brainstorming, it may take a 100 ideas to eventually come up with one that has promise of being developed. However with out those other 99 the idea may never have been generated.

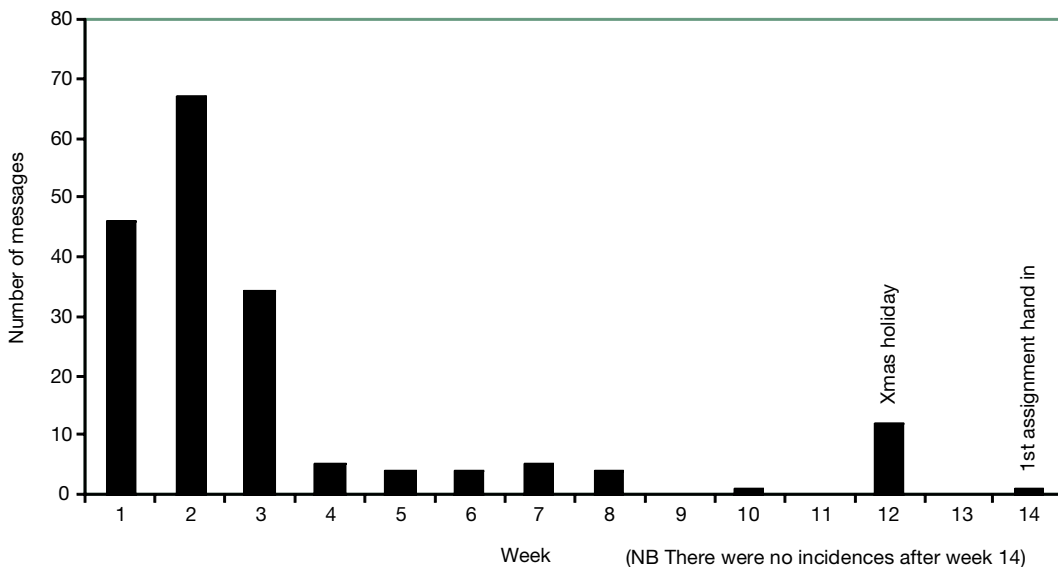
A further debate arose from a complaint about the stresses of the first assignment and group work. This debate appeared to have been entered by a fair number of students, each with a pertinent point to make regarding their enforced reliance upon each other for the speed and direction of their study and the similarity of this to teams in clinical practice. How many students contributed to all these discussions is not clear. This discussion board allowed anonymous entries so the same students may have made repeated entries. It appears that the notice board reflected the extremes of student opinion: those who were positive about the method of delivery and those who did not like it.

Within the groups, following the initial exchanges, the communication very quickly centred on group organization. Figure 2 shows the number of organization-of-topic related messages by week up until the first assignment deadline. Students tended to organize themselves quickly. Perhaps this reflects the pragmatic emphasis of team organization within nursing. The residual communication tended to reflect individual changes of sub-topic usually caused by an inappro-

priate choice or because of unrealized conflict with other group members. Other causes of continued organizational messages were latecomers to the group and students re-clarifying what topics other members had chosen. There was a small flurry of organizational-related messages as deadlines approached. This represented the last-minute workers who were asking for information from the group and verifying the other members' choices.

A further theme that appeared was anxiety over assignments. Communication with an assignment-focus figured regularly and was higher shortly before the first assignment deadlines although this was much reduced thereafter. This is perhaps not surprising; in a conventionally taught course, one would expect students to want to show draft assignments shortly before submission date. The electronic communication may simply be a replacement for those visits. What also became apparent though was the tension between those students who liked to prepare for their assignments early and those who left things to the last minute.

my only concern about working this way is we have to rely on other people in the group. If we knew who they were we would be able to contact them directly. Take my group for instance, three out of the six have contacted our notice board, do we make decisions about the topic we want to choose or do we wait until everybody has made contact? Maybe I am panicking but we are on placement in two weeks not, all of us has direct use of a computer. Does anyone else have any idea's or concerns.



**Figure 2** Group organization-related message posting by week

Again, the latecomers tended to be content to go with whatever the rest of the group had decided.

Encouragement from lecturers to move on through to a knowledge construction stage was limited. Initially, academic questions were answered quickly. However, following a discussion in the lecturers' notice board, it was agreed that it would be prudent to delay responses. This arose because one of the flowing student comment discussions had ceased once a staff member had replied directly to a comment. Delayed response fulfilled the function of deliberate silence in a face-to-face meeting. Students seemed more likely to engage if the lecturer did not enter into a dialogue. Despite this strategy, student communication remained at the level of socialization and occasional information sharing. Messages based on higher-thinking orders were rare. Even peer support communication was limited except where students appeared to be sure that support was not a prerogative of the facilitator.

## DISCUSSION

In developing a move towards a more constructivist approach to learning with online delivery, the module was partially successful. From the quick demise of communications relating to ICT anxiety, it would appear that the students became at least comfortable with this element of the module early on; perhaps it was the novelty of the medium that had spurred the anxiety. Once they had experienced the relative simplicity of operating in a Web environment, their anxiety appeared to die away.

If this is a typical example then the development of online learning will reach a critical mass where it is so widespread that students will consider it normal. Until then, and maybe after, it is important to recognize the students' experience and design learning activity to optimize students' acceptance and development. Our students were quick to socialize online. This is, in part, because we encouraged them to do so. Because we have the face-to-face lecture component, we could introduce the module using traditional methods. Consequently, we could demonstrate the system – using volunteer, technophobic students – and we could familiarize them with the environment. We could also set the expectations for socialization. Essentially, we have developed an effective strategy for addressing the technology and social issues using an initial, face-to-face contact.

Where the module design was less successful was in

the move to a constructivist approach. There was some information sharing but practically no discussion within the groups. Despite requests for comments about their work to each other, there was no critical appraisal. The comments mostly fell into the peer support category with praise. Laurillard (2000) notes that the use of Web ICT goes beyond her original conversational framework (Laurillard, 1993) and the straightforward narrative discourse of traditional lectures and books. In traditional methods, the formalization and questioning of concepts is often deferred to seminars or tutorials, or remains a private matter for the student. ICT allows students not only to question ideas and to reflect and adapt in the light of theory, but it also allows the students to question amongst themselves and to offer support and criticism to each other outside the influence of the lecturer. Our students, however, did not enter strongly into this conversational framework but continued to direct a large part of their communication to the lecturing staff, largely ignoring the opportunity to engage in their own discussion. This is in direct contradiction to both Cravener's and Billings' findings of increased critical thinking and the promotion of active learning (Billings, 2000; Cravener, 1999).

If it is accepted that students will generally be motivated to do well in study then they cannot be blamed for the shortfalls in the success of the module delivery. Therefore, the design of the module and the behaviour of the lecturers must be examined. The module design allowed students to communicate easily and it gave them a motivation for organizing themselves. This they did quickly. However, the assignment structure only asked them to organize themselves. There was an assumption in the design that they would discuss their subject matter, and yet they did not do so. That they were not required to discuss the topics, coupled with their reluctance to critique others' work was not conducive to constructivism. This was the first time for most of them that they had been required to see other people's essays. One student stated that it was difficult to work this way:

if people in your group had written essays that weren't of a very high standard . . . you still had to use them. So you're picking through them thinking 'I don't like that, it doesn't make sense' but I've got to use it.

This would indicate that they could have helped this student produce a better essay and make the theoretical argument more explicit. Other students stated that they would feel uncomfortable criticizing other people's essays. The design of the delivery made assumptions

that students would, and could, discuss and critique other course members' essays and contributions. That they did not do this reflects a failing on the part of the design. One of Murphy's (1997) constructivist checklist items is scaffolding; the framework provided to support students in their development of knowledge (such as guides and criteria for critiquing, structure for feedback). This was clearly missing in our design. A question remains though: whether such reluctance to critique each other's work is a general characteristic or whether it was increased by the requirement to communicate online and without mitigating non-verbal communication. Further study is needed into how to harness the debating skills evident in the 'comments' notice board to develop lively debate around module issues.

What would also appear to need addressing are facilitators' skills. As in traditional delivery, facilitators need to assemble an inventory of techniques to encourage discussion. Online delivery requires a different set of skills to adapt to the different medium (Barker, 2002). Monteith and Smith (2001) suggest that staff development needs to go beyond the practical, software-based workshops that we provided. It needs to revisit theories of encouraging contribution and discussion in the light of the new medium. This would include debate around when to contribute, how to answer queries and how to move the groups towards higher order thinking skills. It follows that if facilitators have clear expectations of online activity, and a toolbox of skills to communicate and support students, then students will be more likely to meet these levels of activity.

## CONCLUSION

The evaluation of this module has identified partial success for online learning in so far that students generally logged on and began to socialize online quickly. Furthermore, they showed good skills in organizing themselves online. However, there was no evidence to suggest that they had developed a constructivist approach to learning. Analysis of the staff and student communication indicated that the module design contained assumptions that flawed its intention. The question remains as to whether online communication inhibits constructive criticism between student peers. If online learning is to be successfully adopted in relation to the pedagogic aims discussed here, academic staff may need support in developing effective strategies to address these issues in the context of training in online facilitation skills and techniques.

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## BIOGRAPHICAL NOTES

Matthew Hughes is a Senior Lecturer in the Learning Technologies Department within the Faculty of Health and Social Care at the University of the West of England. The department takes a particular interest in the evaluation of learning technologies. Norma Daykin

is a Reader in the School of Health, Care and Policy Studies in the same faculty.

**Address for correspondence:** Matthew Hughes, Learning Technologies Department, Faculty of Health and Social Care, University of the West of England, Bristol, BS16 1DD, UK.

Tel: +44 (0) 117 344 8585;

Fax: +44 (0) 117 344 8870;

e-mail: [matthew.hughes@uwe.ac.uk](mailto:matthew.hughes@uwe.ac.uk)



